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<110> F. HOFFMANN-LA ROCHE AG

<120> PROCESS FOR THE MANUFACTURE OF CAROTENOIDS AND
BIOLOGICALLY USEFUL MATERIALS THEREOF

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Gly Tyr Asn Thr Ala Thr Lys His Leu Glu Ile Ala Thr Thr Ala Asn
 130 135 140

Gln Asp Pro Leu Ile Thr Leu Thr Pro Ile Ile Gly Leu Asp Ile Trp

gac tac cta tcc caa aac ccc gag tcc gtg cat cag gtg ctg cac ctg	240
Asp Tyr Leu Ser Gln Asn Pro Glu Ser Val His Gln Val Leu His Leu	
65 70 75 80	
ttc agt gat cga gga acc cct gct tct tac cga cac atg cat ggt tac	288
Phe Ser Asp Arg Gly Thr Pro Ala Ser Tyr Arg His Met His Gly Tyr	
85 90 95	
tct gga cac acc ttc aag atg gtc aac agg aac ggt gac tgg aat tat	336
Ser Gly His Thr Phe Lys Met Val Asn Arg Asn Gly Asp Trp Asn Tyr	
100 105 110	
gtc cag att cac atg cgc acc gat cag ggt gtc aag act cac acc aat	384
Val Gln Ile His Met Arg Thr Asp Gln Gly Val Lys Thr His Thr Asn	
115 120 125	
gaa gag gct tcg aaa ctc gac gcc tcc aat ccc gat tca aac gga gac	432
Glu Glu Ala Ser Lys Leu Asp Ala Ser Asn Pro Asp Ser Asn Gly Asp	
130 135 140	
gac ttg ttc gac gca atc aag aat gga gac ttc cct agc tgg acg gtt	480
Asp Leu Phe Asp Ala Ile Lys Asn Gly Asp Phe Pro Ser Trp Thr Val	
145 150 155 160	
cag gta cag gta atg tct cct gag cag gcc cag aag ttc aga tac aac	528
Gln Val Gln Val Met Ser Pro Glu Gln Ala Gln Lys Phe Arg Tyr Asn	
165 170 175	
att ctg gat ctc acc aag gtc tgg tcc cac aag gag ttc cca ctt agg	576
Ile Leu Asp Leu Thr Lys Val Trp Ser His Lys Glu Phe Pro Leu Arg	
180 185 190	
acg att gga aag ttc act ttg aac cga aac gtg gat aac tat ttc gca	624
Thr Ile Gly Lys Phe Thr Leu Asn Arg Asn Val Asp Asn Tyr Phe Ala	

Glu Glu Ala Ser Lys Leu Asp Ala Ser Asn Pro Asp Ser Asn Gly Asp
 130 135 140

Asp Leu Phe Asp Ala Ile Lys Asn Gly Asp Phe Pro Ser Trp Thr Val
 145 150 155 160

Gln Val Gln Val Met Ser Pro Glu Gln Ala Gln Lys Phe Arg Tyr Asn
 165 170 175

Ile Leu Asp Leu Thr Lys Val Trp Ser His Lys Glu Phe Pro Leu Arg
 180 185 190

Thr Ile Gly Lys Phe Thr Leu Asn Arg Asn Val Asp Asn Tyr Phe Ala
 195 200 205

Glu Val Glu Gln Leu Ala Phe Ala Pro Ser His Leu Pro Pro Gly Ile
 210 215 220

Glu Pro Ser Asn Asp Pro Val Leu Gln Ala Arg Leu Phe Ser
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 <212> DNA
 <213> Artificial Sequence

<220>
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 primer for cloning of SOD genes)

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23

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 <211> 23
 <212> DNA
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<220>
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primer for cloning of SOD genes)

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23

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<223> Description of Artificial Sequence:Cat5 (antisense
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<400> 17

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23